CLAIMS

1. A radio frequency identification (RFID) system, comprising:

an RFID base station adapted to communicate with at least one RFID transponder; said RFID base station comprising:

a transmitter adapted to transmit radio frequency (RF) signals to said at least one RFID transponder;

a receiver adapted to receive RF signals backscattered from said at least one RFID transponder; and

a processor electrically connected to said transmitter and said receiver, and adapted to:

determine the amount of time available on a first carrier frequency;

determine the amount of time it would take to perform a particular transaction; and

change to a second carrier frequency before said amount of time available on said first carrier frequency expires if said amount of time on said first carrier frequency is less than said amount of time it would take to perform said particular transaction.

2. The RFID system of Claim 1, wherein said particular transaction further comprises a next transaction, such that said processor is adapted to determine the amount of time it would take to perform said next transaction.

3. The RFID system of Claim 1, wherein said particular transaction further comprises a worst-case transaction, such that said processor is adapted to determine the amount of time it would take to perform the longest possible transaction.

4. The RFID system of Claim 1, wherein said particular transaction further comprises a worst-case transaction, such that said processor is adapted to determine the amount of time it would take to perform the longest possible transaction with said at least one RFID transponder.

5. The RFID system of Claim 1, wherein said particular transaction is a transmission of a particular RF signal, such that said processor is adapted to determine the amount of time it would take to transmit said particular RF signal.

6. The RFID system of Claim 1, wherein said particular transaction is both a transmission of a particular RF signal and an expected reception of a particular RF signal in response thereto, such that said processor is adapted to determine the amount of time it would take to transmit said particular RF signal and the expected amount of time it would take to receive said particular RF signal in response thereto.

7. The RFID system of Claim 1, further comprising said at least one RFID transponder.

8. The RFID system of Claim 1, wherein said RFID base station further comprises a memory device electrically connected to said processor, wherein said memory device is adapted to store at least partial program information as to when said processor should hop to a different carrier frequency.

9. The RFID system of Claim 1, further comprising a digital-to-analog (D/A) converter, said D/A converter electrically connecting said processor to said transmitter.

10. The RFID system of Claim 8, further comprising an analog-to-digital (A/D) converter, said A/D converter electrically connecting said processor to said receiver.

11. The RFID system of Claim 1, further comprising a transceiver, said transceiver comprising said transmitter and said receiver.

12. A method for improving transmission rates in a radio-frequency-identification (RFID) base station, comprising:

performing a first transaction with at least one RFID transponder over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to perform a particular transaction;

forcing said RFID base station to hop to a second carrier frequency before said amount of time available on said first carrier frequency expires if said amount of time on said first carrier frequency is less than said amount of time it would take to perform said particular transaction.

13. The method of Claim 12, wherein said step of determining the amount of time it would take to perform a particular transaction further comprises determining the amount of time it would take to perform a second transaction.

14. The method of Claim 12, wherein said step of determining the amount of time it would take to perform a particular transaction further comprises determining the amount of time it would take to perform a worst-case transaction, said worst-case transaction being the longest transaction that can be performed by said RFID base station

15. The method of Claim 12, wherein said step of determining the amount of time it would take to perform a particular transaction further comprises determining the amount of time it would take to perform a worst-case transaction, said worst-case transaction being the longest transaction that can be performed by said RFID base station and with said at least one RFID transponder.

16. The method of Claim 12, wherein said step of determining the amount of time it would take to perform a particular transaction further comprises determining the amount of time it would take to transmit a particular radio frequency (RF) signal.

17. The method of Claim 12, wherein said step of determining the amount of time it would take to perform a particular transaction further comprises determining the amount of time it would take to transmit a particular radio frequency (RF) signal and an amount of time that it might take to receive a responsive RF signal from said at least one RFID transponder.

18. The method of Claim 16, wherein said step of performing a first transaction with at least one RFID transponder further comprises transmitting a first RF signal to said at least one RFID transponder, said first RF signal and said particular RF signal each comprising information selected from a list of information consisting of commands and data.

19. The method of Claim 12, wherein said step of determining the amount of time available on said first carrier frequency further comprises comparing the amount of time that the RFID base station has continuously been on said first carrier frequency to an amount of time permitted by the Federal Communications Commission (FCC).

20. The method of Claim 12, wherein said step of determining the amount of time it would take to perform a particular transaction with said at least one RFID transponder is performed prior to said step of determining the amount of time available on said first carrier frequency.

21. A frequency-hopping-spread-spectrum (FHSS) method for use in a radio-frequency-identification (RFID) device, comprising:

transmitting a first radio frequency (RF) signal over a first carrier frequency;

determining the amount of time available on said first carrier frequency;

determining the amount of time it would take to transmit a particular RF signal;

transmitting a second RF signal over said first carrier frequency if said amount of time available on said first carrier frequency is greater than said amount of time it would take to transmit said particular RF signal; and

transmitting a second RF signal over a second carrier frequency if said amount of time available on said first carrier frequency is less than said amount of time it would take to transmit said particular RF signal.

22. The FHSS method of Claim 21, wherein said step of determining the amount of time it would take to transmit a particular RF signal further comprises determining the amount of time it would take to transmit said second RF signal.

23. The FHSS method of Claim 21, wherein said step of determining the amount of time it would take to transmit a particular RF signal further comprises determining the amount of time it would take to transmit an RF signal having the longest transmission time of any RF signal that might be transmitted by said RFID device.

24. The FHSS method of Claim 21, further comprising the step of determining the amount of time it would take to receive a modulated RF signal, said steps of transmitting a second RF signal further comprise:

transmitting a second RF signal over said first carrier frequency if said amount of time available on said first carrier frequency is greater than the product of said amount of time it would take to transmit said particular RF signal and said amount of time it would take to receive said modulated RF signal; and

transmitting a second RF signal over said second carrier frequency if said amount of time available on said first carrier frequency is less than the product of said amount of time it would take to transmit said particular RF signal and said amount of time it would take to receive said modulated RF signal.

25. The FHSS method of Claim 24, wherein said steps of determining amounts of time it would take to transmit a particular RF signal and receive a modulated RF signal further comprise:

determining the amount of time it would take to transmit an RF signal having the longest transmission time of any RF signal that might be transmitted by said RFID device; and

determining the amount of time it might take to receive a modulated RF signal in response to transmitting said RF signal having the longest transmission time.